

Chest

CROUP = stridor

Definition

- It is a group of ^{clinical} acute conditions characterized by **croupy cough** which may or may not be associated with:

- 1- Inspiratory stridor.
- 2- Hoarseness of voice.
- 3- Signs of respiratory distress. $\pm$ *± or ead.*

أي حاجة تعمل مشاكل في منطقة الـ larynx

Etiology

1- Laryngeal obstruction

- 1- Mechanical
 - Congenital web.
 - Laryngeal or tracheomalacia.
 - *اشهر واحدة* FB *شوكه سكه*
 - Laryngeal stenosis.

2- Inflammatory

- viral* Para-influenza, RSV, Measles and adenovirus →
 - o Acute laryngotracheo-bronchitis
 - o Acute spasmodic croup.
- H. influenza → acute epiglottitis.
- Diphtheria.

3- Laryngismus stridulus → due to hypocalcaemia. *irritant* ⇒ *affection of adductors of Vocal Cords*

4- Angio-neurotic edema.

5- Laryngeal papilloma.

6- Others:

- Goiter and retropharyngeal abscess.

Clinical Picture

- 1- Croupy cough → characteristic.
- 2- Inspiratory stridor.
- 3- Hoarseness of voice.
- 4- Marked respiratory distress "Inspiratory": → due to laryngeal obstruction.
- 5- Cyanosis may occur.
- 6- Constitutional manifestations e.g. high fever and toxemia and drooling of saliva especially in epiglottitis.

Radiological Findings

1- lateral neck film:

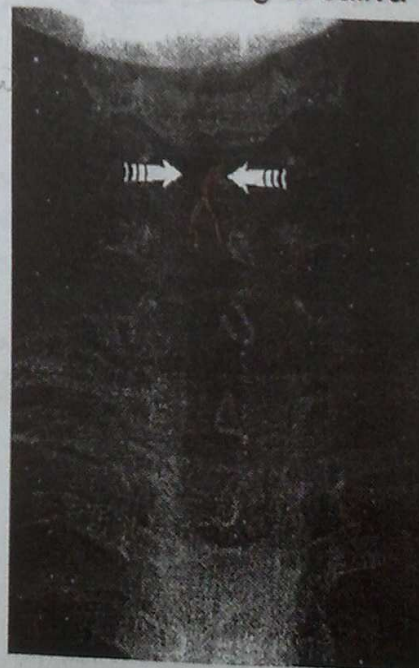
Show subglottic narrowing and normal epiglottis in acute laryngotracheo-bronchitis.

2- PA view:

Shows classic narrow trachea (**Wine bottle sign**) in acute laryngotracheo-bronchitis.

- 3- In acute epiglottitis, edematous epiglottis can be seen in lateral view neck.

4 * Radiopaque F.B.



Shabab فوق الحبال
acute
F.B.

واحدة
تضييق
و توسع

Treatment

Emergency.

"Never endotracheal tube"

1- **Treatment of the cause**

- Hint. ← Epiglottitis → 3rd generation cephalosporin.
- Diphtheria → penicillin, antitoxins.
 - Hypocalcaemia → IV infusion of Ca gluconate
 - FB → bronchoscopic removal.

2- **Cold humidified O2 inhalation**3- **Racemic epinephrine** (2.5% solution) delivered by nebulizer, helps to improve air exchange.4- **Steroids**

- انكر هائفاً - Dexamethasone 0.5 mg/kg for 1-3 doses in severe cases. *No max. dose in Croup.*

5- **Endo-tracheal intubations or tracheostomy:**

- In severe cases may be needed.

- **Acute spasmodic laryngitis (spasmodic cough)** قد يوصى في البلونة في عز البرد V.C. ←

It is brief repeated attacks of croup but less severe, mostly in children 1-3 years old.

Probably it is allergic in nature, TTT is at home with humidified air. *like Asthma.*

Bronchiolitis

- It is common disease of infants affecting terminal bronchioles.
- **Age:** during 1st 2 years of life with peak incidence in the 1st 6 months of age.
- **Season:** winter and early spring.

Etiology

- 1- RSV → the commonest (50%)
- 2- Para-influenza virus.
- 3- Mycoplasma.
- 4- Adenovirus.
- 5- Herpes & rhinovirus.

Clinical Picture

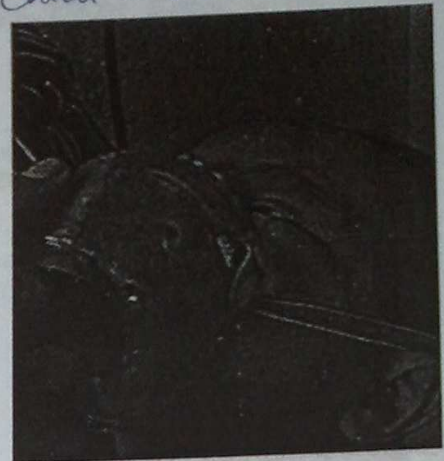
- 1- URT catarrhal symptoms and fever → it usually starts with mild to moderate fever (38-39) with nasal discharge and sneezing.
- 2- Then gradual development of:
- Paroxysms of cough. may productive
 - Dyspnea.
 - Wheeze.
 - Cyanosis.

Examination1- **inspection:**

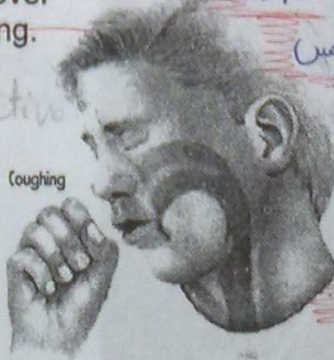
- Tachypnea and working ala nasi.
- Intercostals and subcostal retraction.
- Cyanosis → in severe cases.
- Limitation of movement of the chest bilateral.
- **Barrel-shape chest.** *Bilat. pulse ...

2- **Palpation:**

- Central trachea.
- **Palpable wheeze.**



humified O2 inhalation



coughing

Catarrhal oedema
↓
Narrowing of Bronchioles

بيل 500 يدقل هوا 300 يس

الدنيا يضيق أكثر في الـ Exp.

← انزله 200 يس

hyperinflation

"Bilat." → as dis is system

• Barrel Shape chest

• hyperresonance.

Complications

• Resp. F.

• H.F.

• post viral autoimmune.

3- **Percussion:**

- Bilateral **hyper resonant** chest.

4- **Auscultation:**

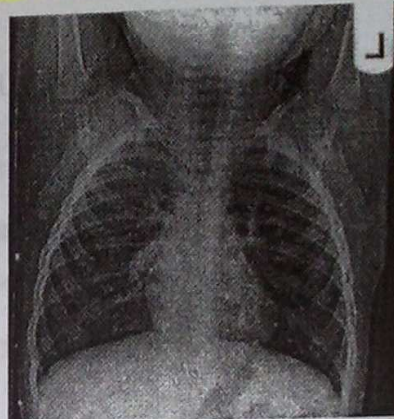
- Bilateral **diminished** air entry.
- **Harsh vesicular** breathing.
- Bilateral **sibilant ronchi** and **fine or medium-sized consonating crepitations** all over the chest.

لواء باله انما اثرت

to differentiate from viral pneumonia

Investigations

- 1- **CXR:** hyper-inflated chest.
- 2- **CBC:** leucocytosis "**lymphocytosis**".
- 3- **Sputum C & S:** if 2ry infection is suspected.
- 4- **Blood gases:** to exclude Respo failure.
- 5- **Viral markers** and viral isolation.



Treatment

- 1- **Hospitalization**
- 2- **Cold humidified O2.**
- 3- **IV fluids** 2/3rd maintenance.
- 4- **Relavir** as antiviral drug especially against influenza virus.
- 5- **Antibiotics:** have no role except if there is 2ry bacterial infection.
- 6- **In severe cases:**

- Corticosteroid: e.g. hydrocortisone 10 mg/dose/6hours IV (some authors refuse cortisone).
- $\beta 2$ agonist inhaler "nebulizer", *sympathomimetic*
- Correction of acidosis $\rightarrow$ NaHCO_3 .
- TTT of heart failure $\rightarrow$ digitalis.
- Mechanical ventilation may be needed.

البني لانه
سه الا فواس

Pneumonia

Definition

- Infection of the lung parenchyma

Classification

A. Anatomical

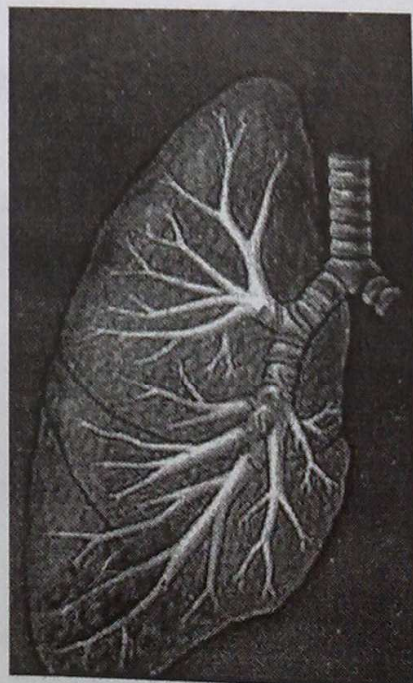
- Bact only* a- Lobar pneumonia
- b- Bronchopneumonia *pneumonic patches around bronchi*
- Viral only* c- Interstitial pneumonia.

B. Etiological:

1- **bacterial:**

- o Gm +ve
 - Pneumococci.
 - Streptococci.
 - Staphylococci.
- o Gm -ve
 - H. influenza.
 - Klebsiella.
 - Pseudomonas aerogenosa.
- o Acid-fast $\rightarrow$ TB
- o Others chlamydia pneumonia

2- **Viral:** RSV - adovirus- Influenza virus



- 3- **Parasitic infestation:** pneumocystic carinii.
- 4- **Chemical:** due to hydrocarbon inhalation → CTZ. ⊕ → aspiration during surgery
- 5- **Physical** → sudden change in Body Temp. → الولد والوالدة
- 6- **Hypostatic pneumonia**
- 7- **Aspiration**
 - Amniotic fluid.
 - Food.
 - FB.
 - Lipoid substance.
- 8- **Radiation pneumonia** → Radiation affects lung parenchyma
- 9- **Hypersensitivity** to hay and dust of air conditioning.
- 10- **Mycoplasma pneumoniae.**

Clinical Picture of Pneumonia in general

❖ Symptoms

- 1- **Fever:** high grad fever in bacterial infection and low grade in others.
- 2- Cough.
- 3- Expectoration.
- 4- Dyspnea. → ½ الرئة مضروبة
- 5- grunting.
- 6- Chest pain → if there is **overlying pleurisy**. "stitching pain".
- 7- Cyanosis. "Respiratory".

❖ Signs

The general clinical signs of pneumonia

1- **Inspection**

- Tachypnea and working ala nasi.
- Intercostals and subcostal retraction.
- **Expiratory grunting**.
- Cyanosis in severe cases.
- **Limitation** of chest movement according to the site of the lesion.

No Pulge, No Ret. as long as
Not complicated.
Lib. → Ret → off → Pul

2- **Palpation**

- Central trachea.
- ↑↑↑ TVF. on affected parts.
- Palpable **pleural rub** if there is overlying pleurisy.

3- **percussion** and tenderness if associated pleurisy.

- Dullness over the affected **lobe** in **lobar** and bilateral, **patchy** in bronchopneumonia and interstitial pneumonia. "Pleurisy ⇒ Tender Perc"
- Percussion is **tender** if there is **overlying pleurisy**.

4- **Auscultation:**

- 1 - Diminished air entry.
- 2 - Bronchial breathing, **Bronchophony** → صوت جرس
- 3 - **Fine & medium** sized consonating crepitations. **أصوات**
- 4 - Pleural rub if there is overlying pleurisy.

All these findings are bilateral in bronchopneumonia and over the affected lobe in lobar pneumonia.

Complications:

4 complications should be excluded in every case:

1- **Pleural effusion:**

- Mostly seen in **infants** & **young children** with severe bacterial pneumonia

2- Respiratory failure:

- It is mainly seen in infants with severe pneumonia
 - $PO_2 < 50$ mmHg.
 - $PCO_2 > 60$ mmHg.
 - $PH < 7.2$.

3-HF:

- Common with severe bacterial pneumonia, mostly due to
 - Toxic myocarditis in bacterial pneumonia:
 - Viral myocarditis in viral pneumonia

5- Paralytic or toxic ileus:

→ القولنج السام ← $\begin{cases} \text{organism} \\ \text{Toxin} \end{cases}$

Investigations

1- CBC

- $\uparrow\uparrow\uparrow$ WBCs mostly neutrophilia in bacterial infection or lymphocytosis in viral infection & TB. + polythemia.

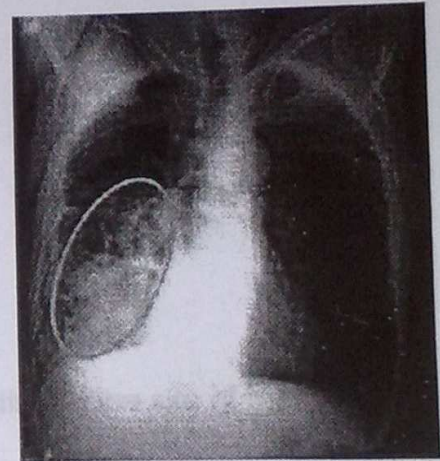
2- CXR → It is important:

- To identify the pathological type
 - Lobar.
 - Bronchopneumonia.
 - Interstitial.
- To detect complications as:
 - Cardiomegaly
 - Pleural effusion
 - Pyopneumothorax.

3- Blood gases to evaluate the respiratory function.

4- Others → to identify the causative agent e.g.

- Culture from
 - Sputum.
 - Blood.
 - Pleural tap.



pneumonia

Treatment

1- Hospitalization

- Is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.

2- Symptomatic ttt

- Fever → Aspirin or paracetamol 15 mg/kg/dose.
- Expectorant & mucolytics.

3- Specific ttt:

a- Pneumococci

- Penicillin is the drug of choice for 7-10 days in uncomplicated cases.
- In complicated or resistant cases 3rd generations cephalosporin.

b- Staphylococci

- Penicillinase resistant antibiotics are used for 3-4 weeks e.g. Methicillin 200 mg/kg/D IV, Cloxacillin 100mg/kg/D IV.

c- Klebsiella → 3rd generation cephalosporin.

d- Mycoplasma: Erythromycin, clarithromycin (15 mg / kg / D) & azythromycin are effective drugs.

e- Influenza A : Ribavirin can be used.

4- **ttt of complications:**

- Empyema $\Rightarrow$ intercostal tube & drainage under water-seal.
- HF $\Rightarrow$ Diuretics $\pm$ Digitalis 0.01 mg/kg/D.
- Respiratory failure $\Rightarrow$ mechanical ventilator.

Pneumococcal pneumonia

- Most common "90%" more common in winter & early spring.
- Peak age in the 1st 4 years of life.
- * **In infants** $\Rightarrow$ diffuse bronchopneumonia.
- **In childhood** $\Rightarrow$ lobar pneumonia.

C/O

- Fever, high grade
- Cough.
- Expectoration.
- Dyspnea.
- Grunting.
- Chest pain $\Rightarrow$ if there is overlying pleurisy.
- Cyanosis.

O/E

❖ **Inspection:**

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Expiratory grunting
- Cyanosis in severe cases.
- Limitation of movement of the chest according to the site of the lesion.

❖ **Palpation:**

- Central trachea.
- $\uparrow\uparrow\uparrow$ TVF.
- Palpable pleural rub if there is overlying pleurisy.

❖ **Percussion:**

- Dullness over the affected lobe in lobar & bilateral, patchy in bronchopneumonia
- Percussion is tender if there is overlying pleurisy.

❖ **Auscultation**

- Diminished air entry.
- Bronchial breathing.
- Fine or medium sized consenting crepitations
- All these findings are patchy all over the chest in bronchopneumonia & over the affected lobe in lobar pneumonia.
- Pleural rub if there is overlying pleurisy.

Complications

1- **Pleural effusion:**

- Mostly seen in infants & young children with severe pneumonia

2- **Respiratory failure:** It is mainly seen in infants with severe pneumonia

- $P_{O_2} < 50$ mmHg.
- $P_{CO_2} > 60$ mmHg.
- $PH < 7.2$.

3- **HF:**

- Common with severe pneumonia:
- Mostly due to toxic myocarditis.

4- **Paralytic or toxic ileus:**

- SP. 5- **Meningism:** Toxins pass through paravert. plexus of veins.
- can occur in upper lobar pneumonia => signs of meningeal irritation as neck rigidity. No inf. cells or org. in lumbar puncture - puncture -ve.

SP. 6- **Lung abscess.**

Investigations

1- **CBC:**

- ↑↑ WBCs mostly neutrophilia

2- **CXR** → It is important:

- To identify the pathological type

(No interstitial) Lobar.
Bronchopneumonia.

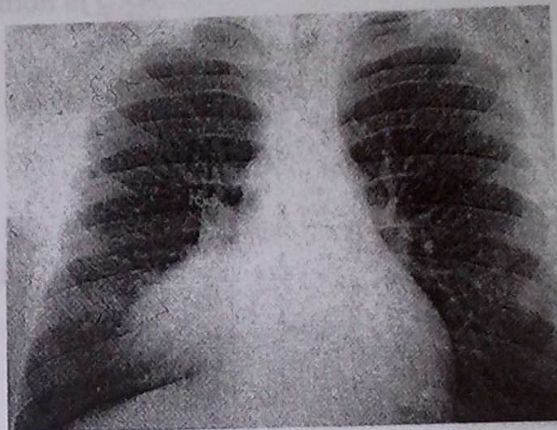
- To detect complications as

(No Pyopneumo) Cardiomegaly
pleural effusion.

3- **Blood gases** to evaluate the respiratory function.

4- **Others**

- ⇒ to identify the causative agent e.g.
 - Culture from isolation of org.
 - Sputum.
 - Blood.
 - Pleural tap.



Right middle-lobe pneumonia

D.D

1. Other causes of pneumonia.
2. Other causes of respiratory distress.
3. Meningitis.

Treatment

1- **Hospitalization**

- is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.

2- **Symptomatic ttt**

- Fever → Aspirin or paracetamol 15 mg/kg/dose.
- Expectorant & mucolytics.

3- **Specific ttt:**

- Penicillin is the drug of choice for 7-10 days in uncomplicated cases.
Penicillin G 50-100,000 U / kg / D divided every 4-6hrs IV.
- In resistant cases 3rd generation Cephalosporin as Cephtriaxone 150 mg / Kg / day or Cephtriaxone 50-75 mg / Kg / day.
- Polyvalent pneumococcal vaccine ⇒ For prevention in susceptible children.

4- **ttt of complications:**

- Empyema ⇒ intercostal tube & drainage under water-seal.
- HF ⇒ Diuretics ± Digitalis 0.01 mg/kg/D.
- Respiratory failure ⇒ mechanical ventilator.

Comp
Case
Penic
H.S

Staphylococcal pneumonia

- The most serious & most fulminated type.
- Predisposed by staph skin infection & nasal carriers.
- Age $\Rightarrow$ 1 year in 70% of cases.
- Mostly $\Rightarrow$ Unilateral bronchopneumonia. *most by RT.*
- Emphysema & pyopneumothorax are very common in CXR.

*Furuncle in parent skin
" Breast or nose"*

C/O

- Fever: high grade & toxemia.
- Cough.
- Expectoration.
- Dyspnea.
- Grunting.
- Chest pain $\Rightarrow$ if there is overlying pleurisy.
- Cyanosis.

O/E

- ❖ Inspection:
 - Tachypnea & working alae nasi.
 - Intercostal & subcostal retraction.
 - Expiratory grunting.
 - Cyanosis in severe cases.
 - Limitation of movement of the chest (usually unilateral).
- ❖ Palpation:
 - Central trachea.
 - $\uparrow\uparrow\uparrow$ TVF.
 - Palpable pleural rub if there is overlying pleurisy.
- ❖ Percussion:
 - Dullness, usually unilateral & patchy.
 - Percussion is tender if there is overlying pleurisy.
- ❖ Auscultation:
 - Diminished air entry.
 - Bronchial breathing & bronchophony.
 - Fine or medium sized consonating crepitations, unilateral, patchy over the side of chest in bronchopneumonia.
 - Pleural rub if there is overlying pleurisy.

Complications

- 1- Pleural effusion:
 - Mostly empyema. *"PUS" الوحيدة $\rightarrow$ exudate*
- 2- Respiratory failure:
 - It is mainly seen in infants with severe pneumonia
 - $P_{O_2} < 50$ mmHg.
 - $P_{CO_2} > 60$ mmHg.
 - $PH < 7.2$.
- 3- HF:
 - Common with severe pneumonia: mostly due to
 - Toxic myocarditis in bacterial pneumonia.
 - Staph pericarditis.

- 4- Paralytic or toxic ileus
- ⑤ Multiple lung abscesses
 - if rupture $\Rightarrow$ pyopneumothorax Or erode bronchus $\Rightarrow$ bronchopleural fistula.
- ⑥ Meningitis.
- ⑦ Osteomyelitis,
- ⑧ Metastatic abscesses in soft tissues.

suppuration every where.

9 + Pneumotocele.

Investigations

1- CBC

- $\uparrow\uparrow\uparrow$ WBCs mostly neutrophilia.

2- CXR $\rightarrow$ It is important:

- To identify the pathological type $\rightarrow$ unilateral Bronchopneumonia.
- To detect complications as
 - Cardiomegaly, pleural effusion
 - Pyopneumothorax.

3- Blood gases to evaluate the respiratory function.

4- Others

- to identify the causative agent e.g.
 - Culture from (Sputum. Blood, Pleural tap).

TTT

1- Hospitalization

- is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.

2- Symptomatic ttt

- Fever $\Rightarrow$ Aspirin or paracetamol 15 mg/kg/dose.
- Expectorant & mucolytics.

3- Specific ttt:

- Penicillinase resistant antibiotics are used for 3-4 weeks e.g. Methicillin 200 mg/kg/D IV. or Cloxacillin 100 mg/kg/D IV.
- Cephalosporins as cephazoline: 50mg/Kg/day for 3-4 weeks if there is penicillin allergy.

3P

4- ttt of complications:

- Empyema $\Rightarrow$ intercostal tube & drainage under water-seal.
- HF $\Rightarrow$ Diuretics $\pm$ Digitalis 0.01 mg/kg/D.
- Respiratory failure $\Rightarrow$ mechanical ventilator.

*CephaZoline: 3P $\left\{ \begin{array}{l} \text{Parental} \\ \text{Power to penetrate Bone.} \\ \text{penicillinase Resistant.} \end{array} \right.$

المضاد هو في (العضو) المضاد *
 مضاد حيوي

Group A Streptococcal pneumonia

C/O

- Mostly diffuse bronchopneumonia *may Bilat. , Rarely lobar.*

- Fever: high grade
- Cough.
- Expectoration.
- Dyspnea.
- Grunting.
- Chest pain → if there is overlying pleurisy.
- Cyanosis.

O/E

❖ **Inspection:**

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Expiratory grunting.
- Cyanosis in severe cases.
- Limitation of movement of the chest, according to the site of the lesion.

❖ **Palpation:**

- Central trachea.
- ↑↑↑TVF.
- Palpable pleural rub if there is overlying pleurisy.

❖ **Percussion:**

- Dullness over the affected lobe in lobar & bilateral, patchy in bronchopneumonia
- Percussion is tender if there is overlying pleurisy.

❖ **Auscultation**

- Diminished air entry.
- Bronchial breathing & bronchophony
- Fine or medium sized consonating crepitations patchy all over the chest in bronchopneumonia & over the affected lobe in lobar pneumonia. :
- Pleural rub if there is overlying pleurisy.

Complications

1- **Pleural effusion:**

- Mostly seen in infants & young children with severe pneumonia

2- **Respiratory failure:**

- It is mainly seen in infants with severe pneumonia
 - $P_{O2} < 50$ mmHg.
 - $P_{CO2} > 60$ mmHg.
 - $PH < 7.2$.

3- **HF:**

- Common with severe pneumonia:
- Mostly due to toxic myocarditis.

4- **Paralytic or toxic ileus**

SP 5- **Post-streptococcal GN or Rheumatic fever**

SP 6- **Septic foci in bones & joints.**

Investigations

- 1- **CBC**: ↑↑↑ WBCs mostly neutrophilia
- 2- **CXR** ⇒ It is important:
 - To identify the pathological type
 - Bronchopneumonia
 - **Hilar lymphadenopathy**
 - To detect complications as cardiomegaly, pleural effusion.
- 3- **Blood gases** to evaluate the respiratory function.
- 4- **Others** ⇒ to identify the causative agent e.g.
 - Culture from
 - Sputum.
 - Blood.
 - Pleural tap.
- 5- **ASOT**. *Anti streptolysin O Titre.*

D.D

1. Other causes of pneumonia.
2. Other causes of respiratory distress.

TTT

- 1- **Hospitalization**
 - is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.
- 2- **Symptomatic ttt**
 - Fever ⇒ Aspirin or paracetamol 15 mg/kg/dose.
 - Expectorant & mucolytics.
- 3- **Specific ttt**
 - **Penicillin** is the drug of choice for 7-10 days in **uncomplicated cases**.
Penicillin G 50-100,000 U / kg / D divided every 4-6hrs IV.
- 4- **TTT of complications**:
 - **Empyema** ⇒ intercostal tube & drainage under water-seal.
 - **HF** ⇒ Diuretics ± Digitalis 0.01 mg/kg/D.
 - **Respiratory failure** ⇒ mechanical ventilator.

Klebsiella pneumonia

- Caused by Friedlander's bacillus
- Usually occur in **debilitating & immunocompromized child**. *"School age"*
- Bronchopneumonia or **lobar** but **mostly lobar** with **cavity formation & bulging fissures**.
- It causes **Hgic** pleural effusion which may be **misdiagnosed as malignant disease**.

C/O

- Fever.
- Cough.
- Expectoration.
- Dyspnea.
- Grunting.
- Chest pain ⇒ if there is overlying pleurisy.
- Cyanosis.

O/E❖ **Inspection:**

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Expiratory grunting.
- Cyanosis in severe cases.
- Limitation of movement of the chest, according to the site of the lesion.

❖ **Palpation:**

- Central trachea.
- ↑↑↑TVF.
- Palpable pleural rub if there is overlying pleurisy.

❖ **Percussion:**

- Dullness over the affected lobe in lobar & bilateral, patchy in bronchopneumonia
- Percussion is tender if there is overlying pleurisy.

❖ **Auscultation**

- Diminished air entry.
- Bronchial breathing & bronchophony
- Fine or medium sized consonating crepitations patchy all over the chest in bronchopneumonia & over the affected lobe in lobar pneumonia.
- Pleural rub if there is overlying pleurisy.

Complications① **Pleural effusion:**

- Mostly Hgic & seen in infants & young children with severe pneumonia

2- **Respiratory failure:**

- It is mainly seen in infants with severe pneumonia
 - $PO_2 < 50 \text{ mmHg}$.
 - $PCO_2 > 60 \text{ mmHg}$.
 - $PH < 7.2$.

3- **HF:**

- Common with severe pneumonia:
- Mostly due to toxic myocarditis.

4- **Paralytic or toxic ileus:****Investigations:**1- **CBC:** ↑↑↑ WBCs mostly neutrophilia.2- **CXR** ⇒ It is important:

- To identify the pathological type
 - Lobar.
 - Bronchopneumonia.
- To detect complications as cardiomegaly, Hgic pleural effusion.

3- **Blood gases** to evaluate the respiratory function.4- **Others** ⇒ to identify the causative agent e.g.

- Culture from
 - Sputum.
 - Blood
 - Pleural tap.

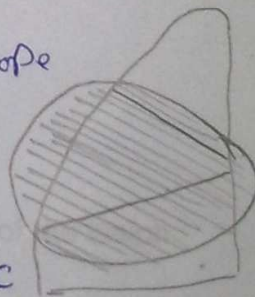
C-X Ray.

* Voluminous lobe
d.t inf. oedema.

→ appear as
a mass.

* Puncture: Hgic
eff

⇒ misdiagnosed as a tumor.
"malignancy..."



TTT1- **Hospitalization**

- is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.

2- **Symptomatic ttt**

- Fever ⇒ Aspirin or paracetamol 15 mg/kg/dose.
- Expectorant & mucolytics.

3- **Specific ttt:**

- 3rd generation cephalosporin e.g. Cefotriaxone or Cefotaxime & Aminoglycosides. *G-ve*

4- **ttt of complications:**

- Empyema ⇒ intercostal tube & drainage under water-seal.
- HF ⇒ Diuretics ± Digitalis 0.01 mg/kg/D.
- Respiratory failure ⇒ mechanical ventilator.

H-influenza type B pneumonia

C/O

- Fever
- cough
- Expectoration.
- Dyspnea.
- Grunting.
- Chest pain ⇒ if there is overlying pleurisy.
- Cyanosis.

mostly lobar
Sometimes Broncho.

G-ve capsulated organism

O/E❖ **Inspection:**

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Expiratory grunting.
- Cyanosis in severe cases.
- Limitation of movement of the chest, according to the site of the lesion.

❖ **Palpation:**

- Central trachea.
- ↑↑↑TVF.
- Palpable pleural rub if there is overlying pleurisy.

❖ **Percussion:**

- Dullness over the affected lobe in lobar & bilateral, patchy in bronchopneumonia
- Percussion is tender if there is overlying pleurisy.

❖ **Auscultation**

- Diminished air entry.
- Bronchial breathing & bronchophony
- Fine or medium sized consonating crepitations.
- Pleural rub if there is overlying pleurisy.

Complications

1- Pleural effusion:

- Mostly seen in infants & young children with severe pneumonia

2- Respiratory failure:

- It is mainly seen in infants with severe pneumonia
 - $PO_2 < 50$ mmHg.
 - $PCO_2 > 60$ mmHg.
 - $PH < 7.2$.

3- HF:

- Common with severe pneumonia:
- Mostly due to toxic myocarditis.

4- Paralytic or toxic ileus:

5- Meningism or meningitis:

- can occur in upper lobar pneumonia $\Rightarrow$ signs of meningeal irritation as neck rigidity.

6- Lung abscess.

Investigations

1- CBC: $\uparrow\uparrow\uparrow$ WBCs mostly neutrophilia

2- CXR $\Rightarrow$ It is important:

- To identify the pathological type
 - Lobar.
 - Bronchopneumonia.
- To detect complications as cardiomegaly, pleural effusion.

3- Blood gases to evaluate the respiratory function.

4- Others $\Rightarrow$ to identify the causative agent e.g.

- Culture from
 - Sputum.
 - Blood.
 - Pleural tap.

D.D

1. Other causes of pneumonia.
2. Other causes of respiratory distress.
3. Meningitis.

TTT

1- Hospitalization:

- is needed in cases with marked RD or complications for supportive care
 - O_2 therapy.
 - Fluid intake.
 - Bed rest.

2- Symptomatic ttt:

- Fever $\Rightarrow$ Aspirin or paracetamol 15 mg/kg/dose.
- Expectorant & mucolytics.

3- Specific ttt:

- 3rd generation cephalosporin e.g. Ceftriaxone or Cefotaxime & Aminoglycosides or Ampicillin 200 mg/Kg/day For 10-14 days.

4- ttt of complications:

- Empyema $\Rightarrow$ intercostal tube & drainage under water-seal.
- HF $\Rightarrow$ Diuretics $\pm$ Digitalis.
- Respiratory failure $\Rightarrow$ mechanical ventilator.

5- H-influenza vaccine.

Viral pneumonia

- It is considered when the fever is mild or absent & the patient doesn't look seriously ill.
- It is either $\Rightarrow$ Bronchopneumonia or interstitial pneumonia.

شهر واد RS

C/O

- Fever, low grade.
- Cough. + sneezing
- Expectoration.
- Dyspnea.
- Grunting.
- **Wheeze.** : d.t neuro irritation $\rightarrow$ $\oplus$ vagal tone $\rightarrow$ BS.
- Chest pain is rare (due to viral myositis or pleurisy)
- Cyanosis (rare).

O/E

❖ Inspection:

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Expiratory grunting.
- Cyanosis in severe cases.
- Limitation of movement of the chest bilateral.

❖ Palpation:

- Central trachea.

شهر واد $\Rightarrow$ Palpable wheeze.

❖ Percussion:

- Dullness (bilateral & patchy), Tender percussion if there is pleurisy.

❖ Auscultation

- Diminished air entry bilateral.
- Bronchial breathing.
- Fine or medium sized consonating crepitations patchy all over the chest. + Sibilant
- Bilateral sibilant ronchi all over the chest.

generalized

Ronchi "wheeze S.
BS.

Complications

1- Pleural effusion:

- rare

2- Respiratory failure:

- It is mainly seen in infants with severe pneumonia
 - $P_{O_2} < 50$ mmHg.
 - $P_{CO_2} > 60$ mmHg.
 - $PH < 7.2$.

3- HF:

- Mostly due to viral myocarditis.

4- Paralytic or toxic ileus: rare.

5- post viral autoimmune disease.

Investigations

1- CBC: $\uparrow\uparrow\uparrow$ WBCs mostly lymphocytosis

2- CXR $\Rightarrow$ It is important:

- To identify the pathological type
 - Bronchopneumonia.
 - Interstitial.
- To detect complications as cardiomegaly, pleural effusion

3- Blood gases to evaluate the respiratory function.

4- Others $\Rightarrow$ viral specific antibodies & serologic techniques for virus isolation.

viral isolation, viral markers.



1- Hospitalization

- is needed in cases with marked RD or complications for supportive care
 - O₂ therapy.
 - Fluid intake.
 - Bed rest.

2- Symptomatic ttt

- Fever $\Rightarrow$ Aspirin (is contraindicated ?) but use paracetamol 15
- Expectorant & mucolytics. - Bronchodilator "d.t B3"

③- Specific ttt:

- Influenza A : Ribavirin can be used $\rightarrow$ RSV.

4- ttt of complications:

- HF $\Rightarrow$ Diuretics $\pm$ Digitalis 0.01 mg/kg/D. *No empyema.
- Respiratory failure $\Rightarrow$ mechanical ventilator.

Mycoplasma pneumonia

Nat
wφ

- Occurs worldwide and is endemic in large communities.
- Peak incidence in school age children "Severely immunosuppressed". Non Bact., Non Viral, non parasite.
- C/P: starts by headache, malaise, fever, rhinorrhea, sore throat, hoarseness & cough then all clinical symptoms & signs of pneumonia.
- High titre of cold Ab $\Rightarrow$ autoimmune hemolytic anemia. تقریباً الوحيدة
- TTT $\Rightarrow$ Erythromycin, Clarithromycin Or azithromycin 15 mg/Kg/day.

Complication $\leftarrow$ auto imm. Haemolytic anaemia.

invest. $\leftarrow$ Compstest. $\rightarrow$ Cold القیاس ال

37° Warm ال

Bronchial asthma

Critical Topic

Definition

- It is a disease characterized by **airway hyper-responsiveness** to **various stimuli** with **spontaneous relieve**:

Epidemiology

- The prevalence has increased in the last 3 decades. It is about **10-15 %** among children.

Risk factors:

1. Poverty. Repeated Bronchitis
2. Black races.
3. Maternal age **<20** years at time of birth. *↓ immu. ? - Aching.*
4. Maternal smoking.
5. Birth weight **<2.5 Kg**.
6. Overcrowding.
7. Intense **allergenic** exposure in infancy.
8. **Sex**: before **puberty** boys are twice affected more than girls while **after** puberty both are equal. *2:1*

* يلاحظ الارتفاع - السعال - ضيق التنفس - فواق - قشعريرة

* من أكثر مسببات الألم ←

Prognosis

- **50 %** of all asthmatics become **symptom free** within **10-20 years**, **recurrence** is common in adulthood.
- This occurs in mild & moderate cases, while in severe cases **95%** become **asthmatic adults**.
- Mortality has increased in the last 3 decades especially among **black** races.
- **Age of onset**: 30 % of patients are symptomatic by **1 year** of age while 80-90 % are symptomatic **before 5 years**.

Precipitating factors

1. Infections:

- It is the **most important** factor esp. viral infection e.g. **RSV**



Respirational v.

2. Drugs:

Aspirin & Endomethacin $\Rightarrow$ cyclo-oxygenase $\Rightarrow$ $\uparrow\uparrow$ SRS-A

3. Food: Milk, egg, fish & nuts.

4. House dust.

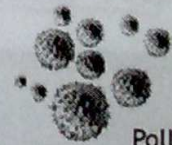
5. Pollens.

البطاني

6. Psychological disturbance

Increase the **severity** of asthma, but **not the cause**.

just aggravate.



Pollen

7. Endocrinal disorders:

? In **males**, asthma usually **improve** at **puberty** while in females it may persist leading to adult asthma $\Rightarrow$ Why?

8. Genetic role

AD gene carried on chromosome **no. 11** $\Rightarrow$ $\uparrow$ T-helper & $\downarrow$ T-suppressor.

$\oplus$ B-lymphocytes

Classification

1. Extrinsic (Allergic asthma):

- + Ve family history.
- + Ve skin test.
- High Ig E titre

→ IgE mediated.

2. Intrinsic (non immunologic)

- Viral agents provoke asthma in early life as RSV, Para influenza & influenza viruses.
- IgE normal.
- Skin tests are -Ve

→ viral mediated

3. Mixed.

Special types

- Exercise-induced asthma.
- Aspirin-induced asthma.
- Nocturnal asthma

GERD → Aspiration.
Normal bronchiole
steroids.

Patho-physiology

Triad of "defining mediator"

1) Bronchospasm (1st 6 hrs)

- Histamine
- SRS-A
- Prostaglandin.
- ThromboxanA₂,
- Bradykinin.
- PAF.

Dry Cough
for timing.

2) Mucosal edema (> 6hrs)

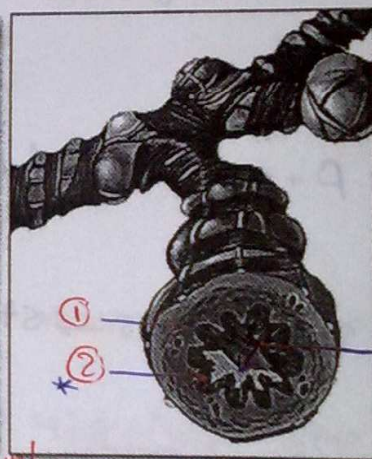
As above.

3) Increased mucus secretion

- SRS-A
- Prostaglandin.



Normal.



⇒ productive cough.

All these factors ⇒ Airway obstruction during expiration (distal airway trapping) ⇒ hyper-inflated chest.

- ❖ Extrinsic asthma: allergens exposure ⇒ induce IgE mediated mast cell degranulation & release chemical mediators.
- ❖ Intrinsic asthma: viral infections ⇒ stimulation of the: parasympathetic mediated vagal reflex causing bronchospasm.

C/P

C/O:

History of repeated attacks of

- 1- Cough & expectoration.
- 2- Dyspnea
- 3- Tachypnea
- 4- Wheezes
- 5- Irritability

On exposure to certain allergen.

Examination:

❖ Inspection:

- Tachypnea & working alae nasi.
- Intercostal & subcostal retraction.
- Cyanosis in severe cases.
- Limitation of movement of the chest bilateral.
- Barrel shape chest.

❖ Palpation

- Central trachea.
- Palpable wheeze.

❖ Percussion

- Bilateral hyper-resonant chest.

❖ Auscultation

- air entry - Bilateral diminished air entry.
- Breath sound - Harsh vesicular breathing.
- Adv.s. - Bilateral sibilant rhonchi & sometimes sonorous rhonchi all over the chest.



Barrel shape chest

Grades

Classified according to: *حسب شدة الأعراض*

1. Frequency of attacks.
2. Frequency of nocturnal symptoms.
3. FEV1sec.

← mild
moderate
sever.

Investigations

1- CXR:

- not to diagnose but to exclude other causes of wheezy chest e.g. viral pneumonia, T.B. lymphadenopathy, F.B.

2- CBC:

- Eosinophilia (>250-400 cell / mm³). *"not present in intrinsic Asthma" or CS*
- Leucocytosis if there is underlying infection. *- polythemia → para Symp. overtone*

3- Sputum analysis

- white-tenacious-casts of epithelial bronchioles, mucus, eosinophils.

4- Allergic skin test: *sp. invest.*

- results may not be related to the mechanism producing clinical illness, but must be correlated to history & combined with RAST (Radio- Allergo- Sorbant Test) to identify allergens.

5- ↑↑ IgE & G4. → *sp. invest.* *"↑ in cases of extrinsic asthma"*

6- Blood gases: to assess the respiratory function.

7- Pulmonary function tests:

- * Mild cases: no abnormality.
- * Moderate cases:
 - Functional residual capacity: ↑↑↑
 - Residual volume: ↑↑↑
 - Vital capacity: ↓↓↓
 - Timed vital capacity e.g. forced expiratory volume in one second: ↓↓↓

RAST *Not same as very e. in vit. (Research Pu)*

Complications

1. Massive lung collapse if there is complete airway obstruction.
2. Pneumothorax & pneumo-mediastinum or even surgical emphysema, if there is partial obstruction.
3. Emphysema.
4. Cor-pulmonale.
5. pulmonary infection and later on Bronchiectasis.

FEV₁

5. Pulmonary infection & later on bronchiectasis.

1- TTT of the acute severe attack (status asthmaticus):-

" + Resp. distress "

1. O2 therapy

- *- to correct hypoxia, 40-50% O2 is usually sufficient it should be given continuously & withdrawn gradually.

2. I.V. fluid therapy (2/3 maintenance)

⊕ Complete Rest.

- To provide an adequate fluid intake & to prevent dehydration.
- Liquefy the viscid secretion.

3. Drugs:

A) Sympathomimetics:

a) Epinephrine 0.01 mg/kg/dose S.C.

لا تفرغها " follow up pulse, B.P. ...

- It can be repeated every 20 min for maximum 2 doses side if there is no tachycardia & hypertension.

improve aed., Sec., B.S. "

b) B2-agonists: e.g :

α in cap. B2

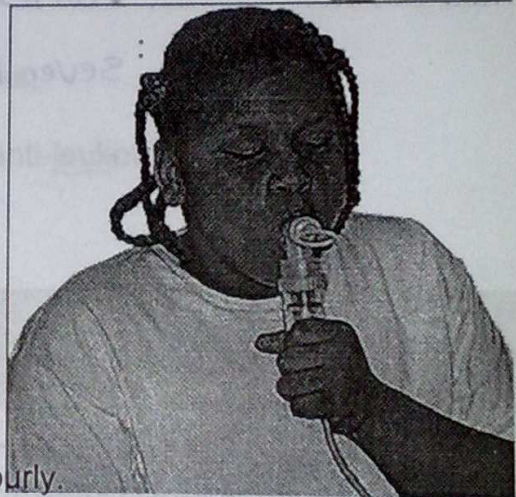
- Terbutaline "Bricanyl"
- Salbutamol "Ventolin"
- Fenoterol "Berotec"

- All these drugs can be nebulized using a special apparatus "Nebulizer"

- Mechanism of action → activation of adenylyl cyclase
⇒ ↑↑ intracellular C-AMP
⇒ relaxation of the bronchial ms.

○ Dose :

- Salbutamol 0.6 mg/kg/D 6 hourly.
- Terbutaline 0.3 mg/kg/D 6-8 hourly.



B) Theophylline:

if No Resp. →

- If there's no response to Sympathomimetics
- Mechanism of action : suppression of phospho-diesterase enzyme
⇒ ↑↑ C-AMP.
- Dose initial = if there's no aminophylline intake in the last 24 hrs = 5mg/kg over 20-30 min. The maintenance dose 20 mg/kg/ 24hr IV drip.

C) Anti-cholinergic drugs: inhaler form.

D) Corticosteroids: دكتور مصطفى المدهفر

in Resistant Cases Given in severe cases as methyl Prednisolone 1 mg / kg / 6 hrs in the 1st 48 hrs, followed by 1 mg/kg/D

E) Antibiotics:

- If there is superimposed bacterial infection.

4. Correction of acidosis ⇒ NaHCO₃.

5. TTT of HF if presents Digitalis 0.01 mg/kg D.

6. Mechanical ventilation ⇒ if there's respiratory failure.

في القصص
اول تاك

2- **TTT in between the attacks:**A. **General:** -

1. Avoid exposure to non specific irritants as : tobacco smoke, fumes, irritants sprays etc.
2. Avoid exposure to precipitating factors.
3. Emotional support.
4. Proper ttt of respiratory infection.
5. Long term controllers:

استعماله $\odot$ Long acting beta 2 agonists by inhalation.

▪ Slow release Theophylline oral BD.

▪ One of mast cell stabilizing drugs.

8. Steroids: 1-2 mg / kg / day to be discontinued within 7 days (inhaled)

▪ Steroids better used in children over 7 years.

CCB $\rightarrow$ $\ominus$ Ca²⁺ influx.

B. **Mast cell stabilizing drugs:**1. **Ketotifen "Zaditin":**

- Orally 0.5-1 mg twice daily.

- Mechanism of action: -

- Release of chemical mediators.

- Ca influx.

- Antihistaminic, anti-kinins & anti-leukotriens.

2. **Disodium cromoglycate "Intal"**

- Used by inhalation actions:

- As above + Mast cell stabilizer.

Bronchiectasis

abst. $\longleftrightarrow$ ch. infection X-Ra

Definition

Irreversible abnormal dilatation of the bronchi.

• Pull of infected secretions "chronic".

Etiology

A. **Congenital type:**

1- Isolated or.

2- As part of kartagener syndrome: "Non functioning cilia"

• Congenital bronchiectasis.

• Dextro-cardia.

• Absent frontal air sinuses or frontal sinusitis.

B. **Acquired type:**

It may be due to either:

1- Obstruction or.

2- Infection & fibrosis.

* **Bronchial obstruction.**

It may be either:

a. complete or $\rightarrow$ absorption collapse $\rightarrow$ $\uparrow$ -ve Dr.

b. Partial.

* **Bronchial obstruction may be due:**

1- In the lumen

• F.B.

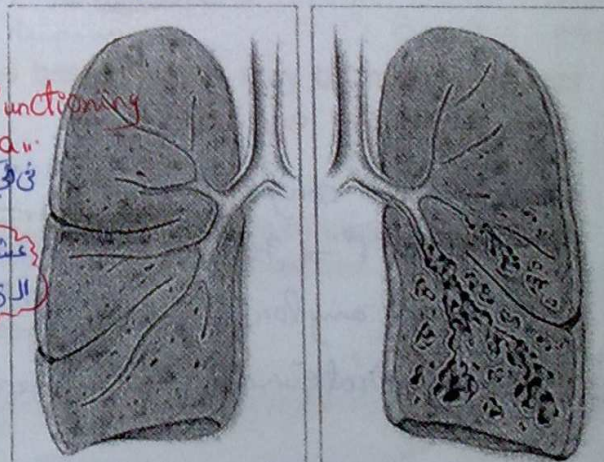
• Thick secretion.

2- In the wall

• TB granuloma. $\rightarrow$ TB adenoma.

• Bronchostenosis.

3- Pressure from outside: by LN or Tumor.



any Bronchiectasis:-

• Bilat. , lower lobe

But if Congenital, it may differ.

C/P

A. Symptoms:

1) Suppurative syndrome:

- Cough - with excessive purulent fetid sputum more in the morning & increase on stooping forwards.
 * أصعب صلالة .. صلالة الصبح *
 yellowish, greenish.
- The onset is usually gradual, the course is progressive over years with characteristic winter exacerbation.

دوى الى يتخوف
العيان

2) Hemoptysis:

- Usually blood tinged sputum, but frank Hemoptysis may occur.

It may be the only presenting symptom in?

isolated Bronch
in upper lobe

- 3) Chest pain $\Rightarrow$ Why?
- 4) Anorexia & poor weight gain.
- 5) Fever.

Bronehiet. Hgic & Sicca الى في الباطنة

B. Signs:

1- General signs

- 1. Low grade fever & wt loss.
- 2. Puffy eyelids $\Rightarrow$ Why?
- 3. Clubbing of the fingers & may be osteoarthropathy.
- 4. Edema of L.L. $\Rightarrow$ Why?

Chronic
Toxaemia

2- Chest signs:❖ Inspection:

- Mild RD.
- Limitation of movement of the chest especially in to basal parts.
- Retraction in the basal parts & bulge in apical parts.

❖ Palpation:

- Central trachea.
- May be palpable wheeze in the apical parts.

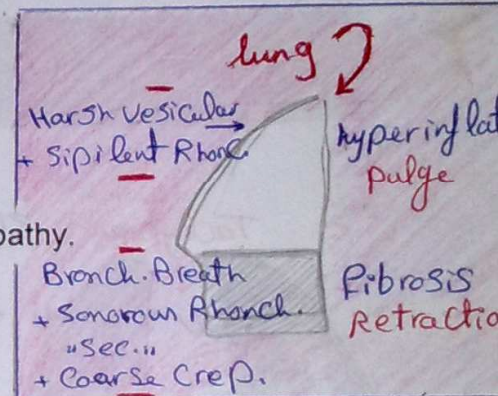
❖ Percussion:

- Patchy of dullness in the basal parts & may be hyper-resonant note in the apical parts.

❖ Auscultation

- Diminished air entry.
- Patchy areas of bronchial breathing & medium sized consonating crepitations, sonorous ronchi & coarse crepitations if there is lung secretions on the basal parts.
- Sibilant ronchi on the apical part.

تسمع فيها
الاصوات



Investigations

1- Sputum culture & sensitivity2- CXR:

- Honey-comb appearance in basal parts & may be emphysema in upper parts.
- Consolidation may be seen around bronchiectatic zones.

3- Bronchography: This is useful to

- Confirm the diagnosis.
- Localize the site.

4- Bronchoscope:

- May reveal the cause.
- May be used to aspirate pus or instillation antibiotics.

* CBC :- neutrophilia d.t 2ry Bact. inf.

صغيرة
وغير

Resp. ف في
من ABG

Therapeutic

5- **Pulmonary function tests:**

- reveals increased pulmonary resistance residual volume.

6- **Electron microscopic examination:**

- of materials from nasal & bronchial mucosal biopsy to diagnose immotile cilia syndrome.

Treatment

1. Postural drainage of pus. *نفسك في وضع السجود وحده يطيب لك فحرقه. تنكز قد ما فخر.*
2. Antibiotics according to culture & sensitivity
3. Bronchoscopic aspiration & antibiotics instillation.
4. Symptomatic Mucolytic & Expectorant. + Bronchodilator.
5. Surgery (indications):
 - Presence of serious symptoms e.g. Hemoptysis.
 - infection not responding to repeated medical ttt.
 - Localized lesion.

Acute dry pleurisy**Etiology****A. Primary pleural affection:**

- 1) T.B.
- 2) Rheumatic. *Collagen dis.*
- 3) Viral. *e.g. Common Cold.*
- 4) Uremia. *acc. on serous memb.*
- 5) Malignant (rare)

B. 2ry to:1) **Lung disease:**

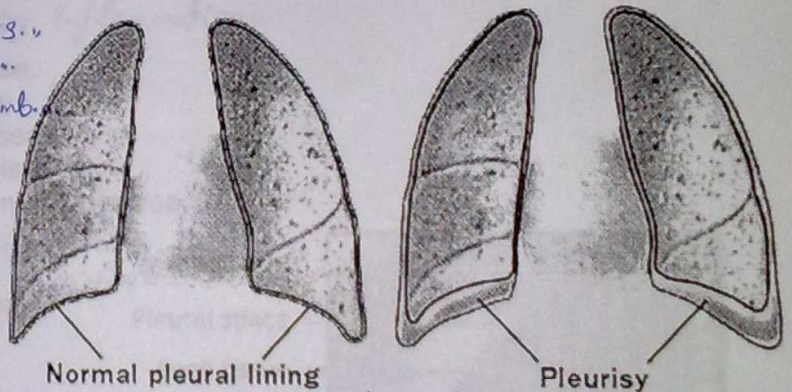
- Pneumonia.
- Lung abscess.
- T.B.
- Infarction.

2) **Mediastinal disease:**

- Mediastinitis. *dt. perp. of oes. e.g. sharp body swallowing.*
- Pericarditis.

3) **Chest wall disease:**

- Osteomyelitis.
- Fracture rib.

4) **Sub diaphragmatic** disease sub-diaphragmatic & amoebic liver abscess.**C/P****A. Symptoms:**

- 1- Chest pain, stitchy in character, increasing with cough & Straining
- 2- Dry cough. *irritative cough.*
- 3- Dyspnea $\Rightarrow$ Why? *Tachypnea.*
- 4- General symptoms as fever, headache & malaise.

B. Signs:

- 1- **Inspection** : limitation of movement on the affected side.
- 2- **Palpation** : Pleural rub.
- 3- **Percussion** : Tender
- 4- **Auscultation** : Pleural rub. *Friction Rub.*

Investigations

- 1- **CXR**: to detect the underlying chest disease. *CXR يبين أمراض الصدر*
- 2- **Other investigations** to detect the cause e.g.
 - Tuberculin test.
 - Urea & creatinine.
 - Abdominal sonar.

Treatment

- 1- ttt of the cause.
- ② Analgesics to relief pain. *→ endomethacin → Sever gastritis*

Pleural effusion

Definition

Collection of fluid in the pleural sac.

Classification

A. **Serous**: which may be:

I. **Exudate**:

- Idiopathic ⇒
- 2ry to ⇒ "near by inflammation".
 - 1- Pleural disease.
 - 2- Lung disease;
 - 3- Chest wall disease.
 - 4- Mediastinal disease.
 - 5- Infradiaphragmatic disease.

II. **Transudate**: → Always Bilat.

- 1- HF. *لا يمكن يكون uni.*
- 2- Nephrotic syndrome.
- 3- Liver cirrhosis.

B. **Hemorrhagic**:

- T.B.
- Klebsiella pneumonia.
- Traumatic. *sex tissue ad*
- Malignancy. *→ friable cells*

C. **Chylous**:

- Thoracic duct obstruction.
- Traumatic injury to thoracic duct.

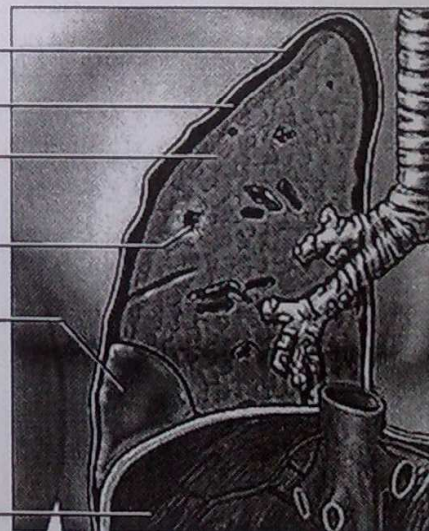
D. **Empyema**:

- Pneumonia. *Bronchiectasis*
- Rupture of lung abscess.
- Contamination during tube introduction.
- Rupture of sub-diaphragmatic abscess.

Pleura
Pleural space
Lung tissue

Tubercular lesion
Pleural effusion
resulting from
tuberculosis
infection

Diaphragm



C/P

A. **Symptoms**:

- 1- High fever & toxemia esp. with empyema.
- 2- Irritative cough.
- 3- Dyspnea.
- 4- Cyanosis in massive effusion.
- 5- Symptoms related to etiology.

① manifest of under lying pathology.

Broncho Pl. Fistula

B. signs:

❖ **Inspection:**

- RD
- Limitation of movement on the affected side.
- Bulge ⇒ unilateral. "Common"

Ret. → underlying Collapse or Fibrosis

❖ **Palpation:**

- The trachea is pushed to the opposite side in massive effusion.
- ↓↓TVF

❖ **Percussion:**

- **Stony dullness** on the affected side.

❖ **Auscultation:**

- air-entry.
- Breath sounds & adventitious sounds depends on the underlying etiology.

Investigations

1- **CXR**

- Diffuse homogenous opacity obliterating the costophrenic angle, trachea pushed to opposite side.

2- **Pleural aspiration for:**

- Physical examination
- Chemical.
- Bacteriological.
- Cytology.

4 tubes

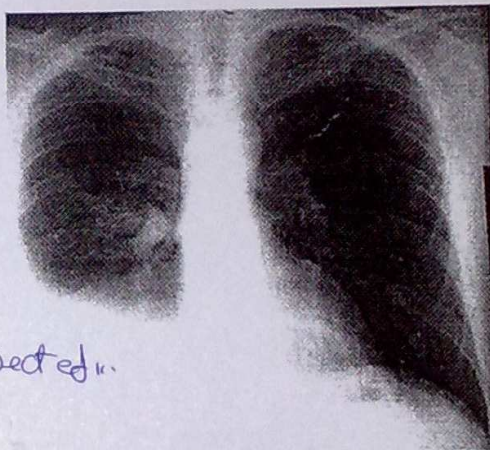
color, sp. gravity, pH, etc. see clinical

3- **Pleural biopsy.**

if malignancy is suspected.

4- **Tuberculin test.**

5- **Sputum examination For T.B.**



4 tubes.

Complications

1. **With staph**

- Bronchopleural fistula.
- Pyopneumothorax.

2. **Local**

- Pericarditis.
- Pulmonary abscess.
- Peritonitis.
- Osteomyelitis of ribs.

3. **Septic**

- Meningitis.
- Arthritis.

How to differentiate bet. transudate, exudate.

Treatment

1. Of the underlying cause.
2. Symptomatic.
3. Tube drainage under-water seal, the tube inserted for 7-10 days.

- pus even if small amount

- massive eff. → Regardless type

• marked by cyanosed, distressed

• Percussion, X-Ray eff. Reach 2nd space.

Acute

Lymphoblastic

Myeloid

④ All

I General Supportive measures

- 1) Anaemia → Blood Transfusion
- 2) Bleeding → platelet transfusion
- 3) Infection → Isolation & Antibiotics
- 4) Hyperuricemia → Allopurinol, Allantoin urine.
- 5) Hyperphosphatemia → phosphate binders (sevelamer, cinacalcin)
- 6) leukostasis → leukopheresis

II Specific measures

- I - Remission induction (VAP-L)
 - 1) Vincristine
 - 2) Adriamycin
 - 3) prednisone
 - 4) L-asparaginase
- II - Remission Consolidation
 - 1) Cyclophosphamide
 - 2) Cytosine arabinoside
 - 3) 6-mercaptopurine
- III - Maintenance therapy
 - 1) 6-mercaptopurine
 - 2) Methotrexate

Chronic

Myeloid

I General Measures

Blood transfusion - Antibiotic

II Specific

a) Hydroxyurea for hyperleukogatesis (Maintain TLC within normal range)

b) α -Interferon:-

• reduction of percentage of Ph+ve cells

• apparent demination of Ph chromosome

c) Radiotherapy for spleen splenectomy

d) leukopheresis

e) Ht of Blast crisis according to type of Blast cell (As acute leukemia)

f) BM Transplantation

Lymphocytic

II Stage A

- no specific Ht
- reassurance & follow up

II Stage B

- chemotherapy ± Chlorambucil
- radiotherapy to LN

III Stage C

Anaemia → Packed RBC Transfusion
Thrombocytopenia → platelet concentrate
BM Failure → Prednisolone
Combination chemotherapy

Case 1

Fever, Sore throat, liver ++, spleen ++, LN in

stage

- TLC → variable
- Early BM Failure
- Tumor lysis S

Case 2

♂, middle age, massive splenomegaly

- Huge spleen
- Blast Crisis
- Hydroxyurea
- Interferon

Case 3

old ♂, liver ++, spleen ++, lymphadenopathy

B₁ picture → lymphocytosis

- Infection & auto antibodies
- sustained absolute lymphocytosis
- Rituximab
- Richter's transformation